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SOURCE

Energeticheskiy Byulleten, No 3, 1950.

A MOBILE 50-KW ELECTRIC POWER STATION

G. S. Lopoyan

In recent years the petroleum industry has been employing mobile and semimobile electric power stations equipped with Diesel engines, including the 40 hp ND-40 and 300 hp V2-300 produced by the Electromechanical Plant of Glavenergoneft' (Main Power Administration for Petroleum Enterprises).

Beside a MacLauren engine and a Brash generator, the outfit described comprises a starting air comprissor, and tank, air cleaner, 170-liter fuel tank, radiator for water cooling, oil and fuel filters, electric distribution apparatus (mounted in metal cabinets), and a voltage regulator. All of the units are mounted on slide rails. Special shock absorbers are provided under the runners to prevent vibration and ensure quiet operation. The total weight of the station is 4,166 kg length, 4,277 mm; width, 1,200 mm; height, 2,312 mm. The base for the engine consists of a rigidly welded sheet steel structure.

The motor is supplied with Ricardo Cemet cylinder heads with spherical combustion chambers connected to the working cylinder space through a narrow neck. The purpose of the Ricardo chamber is to ensure intensive and uniform mixture of the air and fuel particles. The engine is started by means of a special smoldering paper which is ignited in a recess in a special holder and is then inserted into the Ricardo chamber where it is fastened, thereby starting the engine.

The engine operates on heavy fuel for which a special preheater is provided. The fuel tank consists of two chambers, one for heavy fuel and the other for lighter starting fuel. Before shifting the engine to heavy fuel, the fuel temperature must be raised to 65 deg.

The engine pistons are made of a special aluminum alloy and the atomizer is of the open type with a needle center. The fuel pumps were made by the Brash Company. The crankshaft and piston pins are lubricated under a pressure of 2.4-2.7 atm, while the cylinder walls, camdiaft bearings, etc., are sprayed. The temperature of the oil coming out of the engine must not exceed 70 deg.

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Brief Technical Data on the MacLaren Engine

D	88 hp
Power	1,000
Rpm	142 mm
Cylinder diameter	200
Piston stroke	200
Number of cylinders	4
Number of cycles	4
Fuel injection pressure	120 kg/sq cm
	39
Compression pressure	17
Degree of compressior	= 1

The station generator is provided with a 1.29 kw exciter rated at 1,500 rpm and 56 volts and driven by means of multiple V-belt transmission from the generator shaft. The generator itself is directly connected to the engine through a rigid coupling.

Characteristics of the Brash Generator

D	50 kw	
Power	1,000	
Rpm	230/400 v	
Voltage	90 amp	
Stator current	0.8	
Power factor		
Type of current	three-phase, ac	

NOTE: Original document, shows line sketch of whole unit and cross-sectional diagram of engine portion.

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